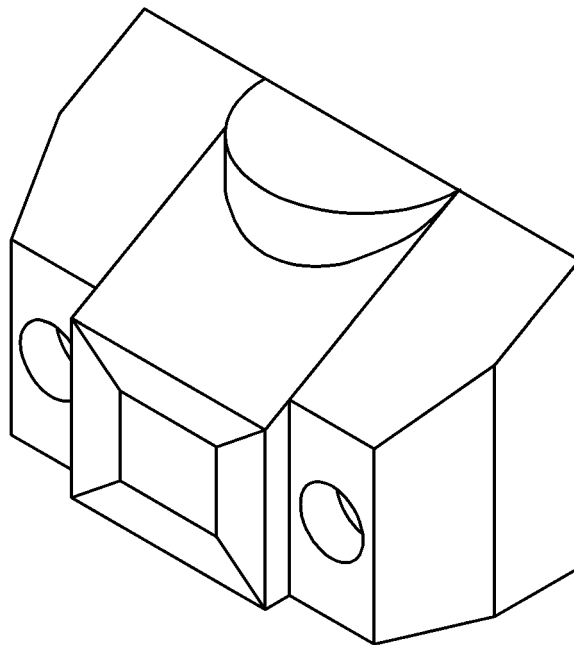*Coimisiún na Scrúduithe Stáit*
State Examinations Commission

Junior Certificate Examination 2005

Technical Graphics
Higher Level

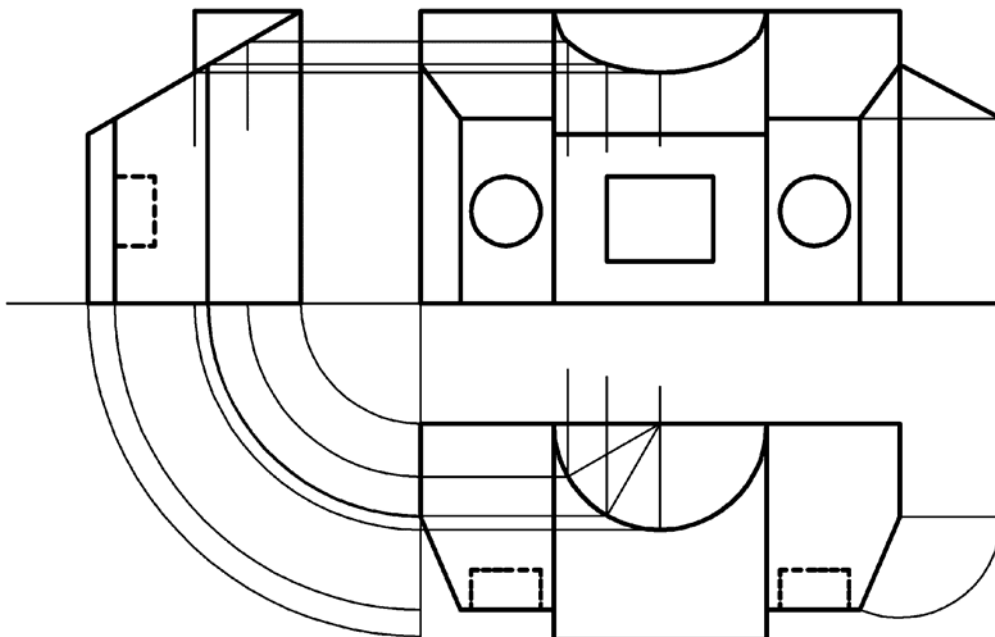# Marking Scheme

Sections A and B

Section A

Q1.	12	Four diagrams, 3 marks for each correct label.	
Q2.	12	Shading	
Q3.	6	Correct compass setting	
	6	Stepping distance seven times	
Q4.	12	One mark per line	
Q5.	3	Swing down side	
	3	Bisect baseline	
	3	Draw semi circle	
	3	Side of square	
Q6.	12	2+2 For each of the points A, B and C	
Q7.	4	Rotate in plan	New xy line
	4	Projection from plan and in elevation 2+2	Projections from plan 2+2
	4	Complete elevation	Complete elevation
Q8.	12	Toy depicted in a <u>good quality</u> freehand pictorial sketch	
Q9.	12	Trim, Mirror and Fillet (4 marks for each correct term)	
Q10.	4	Vanish horizontal keys	
	4	Locate upper rear corner	
	4	Locate sloping line to complete	
Q11.	4	Draw circle of rotation	
	4	Establish 45° angle	
	4	Draw pentagon in new position	
Q12.	12	Six points at two marks each	
Q13.	4	Generator to contain P in plan	Rotate P to extreme gen. in plan
	4	Same generator in elevation	Project to extreme gen. in elevation
	4	Correct position of P in elevation	Correct position of P in elevation
Q14.	4	A = 55°	
	4	B = 120°	
	4	C = 60°	
Q15.	8	Four sectors at 2 marks each	
	4	Shade or colour to enhance presentation	

Section B

Q.1 Section B — Orthographic Projection

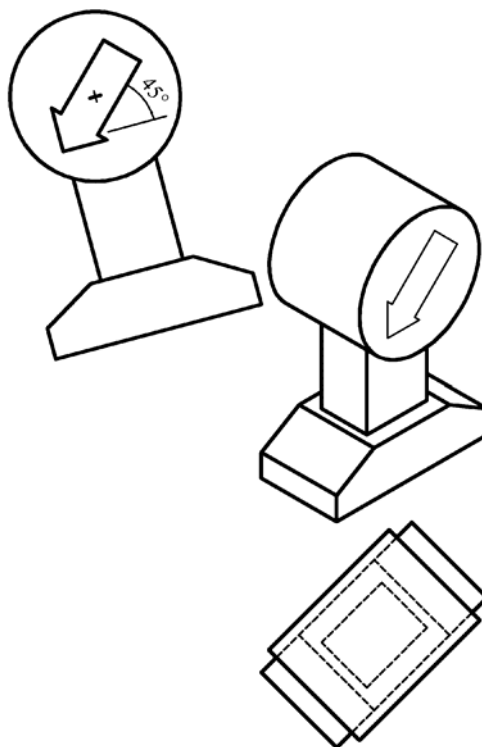|	**Elevation (23)**	
11	Lines	
2	Circles (1 mark each)	
4	Sloping lines (2+2 left and right speakers)	
6	Semi-elliptical curve (Points in Plan 2, Project to E.V. 2, Project to Ele. 2)	
	Plan (18)	
16	Lines	
2	Semi-circle	
	End View (11)	
11	Lines	
	True Shape (8)	
4	Rotate in plan	Project perp. (2) New xy line (2)
4	Complete in elevation	Transfer heights (2) Complete (2)
10	**Drafting, accuracy, presentation**	

Total Marks 70

Q.2 Section B — Orthographic, Rotation, Elevation
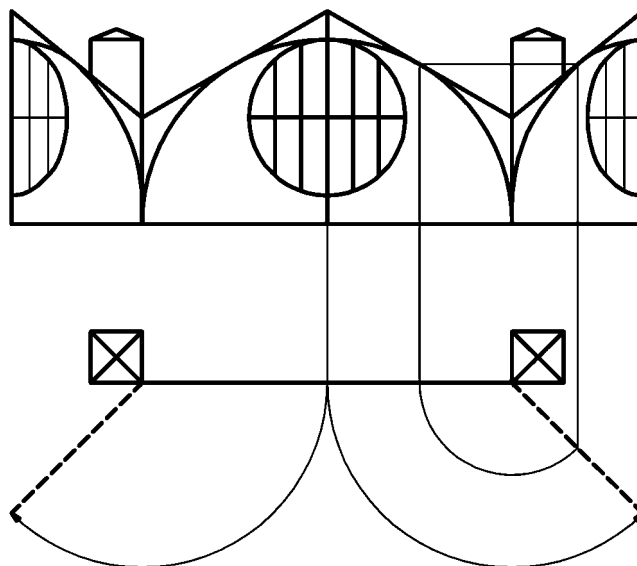
	Given Elevation (18)
6	Piers (3+3)
2	Semi-circle
4	Semi-hexagon
2	Circle
4	Vertical lines at equal spaces
	Given Plan (7)
4	Piers (2+2)
1	Straight line
2	45° lines (correct length)
	New Figure (35)
3	Projection of points from elevation to plan
4	Rotation of points in plan
3	Projections from plan to new figure
3	Projections from elevation to new figure
12	Lines (6 each side)
6	Semi-elliptical curves (3 marks each)
4	Quarter-elliptical curves (2 marks each)
10	**Drafting, accuracy, presentation**

Total Marks 70

Q.3 (a) Section B — Isometric Projection (Axonometric Axes Method)

Axonometric Axes Method	
Plan (16)	
2	Setting-up (position and orientation at 45º).
14	Lines
Side Elevation (13)	
2	Setting-up (position and orientation at 15º).
8	Lines
1	Circle
2	Drawing arrow
Completion of Isometric Projection (31)	
14	Base (One mark per line)
5	Stem
8	Projections of circular front and back of road sign
4	Arrow in isometric
10	**Drafting, accuracy, presentation**

Total Marks 70

Q.3 (b) Section B — Isometric Projection (Isometric Scale Method)

Isometric Scale Method	
Isometric Scale (12)	
4	Setting up isometric scale (2 marks for 30º line and 2 marks for 45º line)
4	Applying dimensions on 45º line
4	Projecting from 45º line onto 30º line
Projection of base, circle and arrow (11)	
4	Construction required for base
5	Construction required for circle
2	Construction required for arrow
Isometric Projection (6)	
3	Direction of axes (1,1,1)
3	Axes lengths applied from isometric scale.
Completion of Isometric Projection (31)	
14	Base (one mark per line)
5	Stem
8	Projections of circular front and back of road sign
4	Arrow in isometric
10	**Drafting, accuracy, presentation**

Total Marks 70

Q.4 Section B — Development
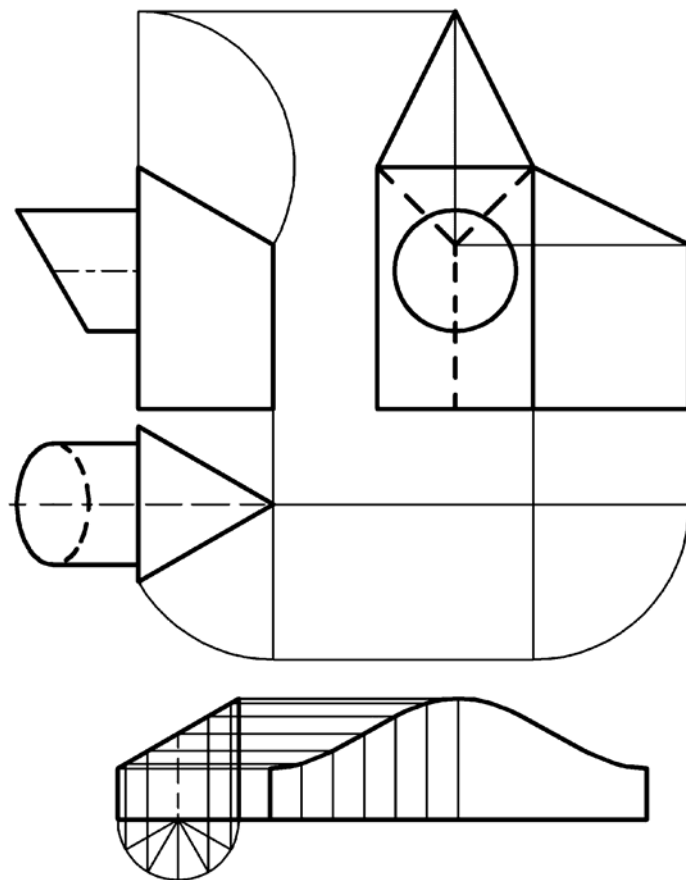
	Elevation (7)	
7	Lines	
	Plan (16)	
4	Correct equilateral triangle	
4	Outline of cylinder (2, 2 marks)	
8	Projections of ellipse (2 major axis, 2 minor axis, 4 curve)	
	Development of cylinder (21)	
4	Division of circumference of cylinder	
4	Stepping out length of developed cylinder (2 correct increment, 2 correct No.)	
6	Projecting lengths	
3	Locating points	
4	Drawing the required development	
	Development of B and C (16)	
8	Development of B	
8	Development of C	
10	**Drafting, accuracy, presentation**	

Total Marks 70

Q.5 Section B — Transformation Geometry
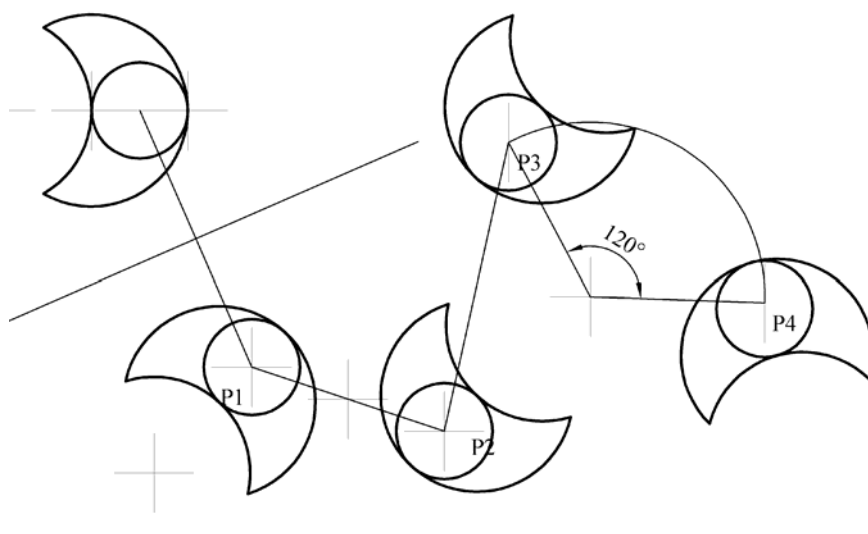
	Setting up (8)
4	Drawing crescent (2+2)
4	Drawing circle
	Axial Symmetry (12)
4	Projecting perpendicular to symmetry line. (Deduct 2 marks if not perp.)
4	Locating key image points.
4	Drawing the image figure accurately.
	Central Symmetry (12)
4	Lines projected through point O
4	Locating key image points
4	Drawing the image figure accurately
	Translation (12)
4	Lines projected parallel to P2 –P3.
4	Locating key image points.
4	Drawing the image figure accurately.
	Rotation (16)
4	Locating centre of rotation. (Joining P3 to P4 and applying 30° angles).
4	Drawing arcs
4	Locating key image points.
4	Drawing the image figure accurately.
10	**Drafting, accuracy, presentation**

Total Marks 70

Q.6 Section B — Ellipse and Parabola
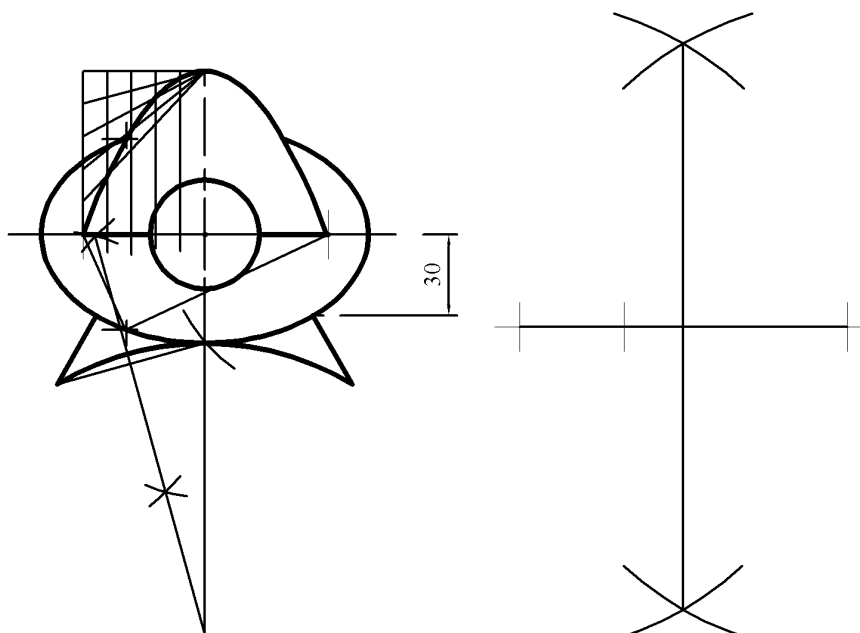
	Setting-up (5)
5	Points A, B, C and circle diameter 40 (1, 1, 1, 2)
	Parabola (14)
8	Construction to determine points on the parabola (2,2,2,2 marks).
6	Drawing of parabola ABC
	Ellipse (23)
5	Locate point on curve and add focal radii (1 + 4)
2	Bisect to find half major axis
4	Correct position and length of major and minor axes (2 + 2)
6	Locating additional points on the curve
6	Drawing the ellipse
	Arc DEF (18)
2	Lines at 60° (1+1)
2	Locate points D and F
4	Drawing a chord
4	Bisect chord and locate centre of arc
6	Drawing arc DEF
10	**Drafting, accuracy, presentation**

Total Marks 70